The Effect of Investment on Indonesian Economic Growth: A General Evaluation Estimator Approach

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Abstract: This study examine the effect of investment on Indonesia's economic growth with the general evaluation estimator model. The methodology used is multiple linear regression methods with lag (-1) by using Eviews 6. The results show that Investment (-1) and tax (-1) positively affect economic growth, but negatively to interest rate (-1). This needs to be considered further whether the regulations provided by the government regarding interest rates are right on target to increase economic growth.

Keywords: investment, stimulating national products, increase economic growth

1. Introduction

Slowness in Indonesia's Economic Growth in 2016 was inseparable from the impact of the slowdown in global economic growth. Unprofitable global economic conditions risk disrupting Indonesia's economic recovery process. The problem of the global economy consists of the uncertainty of the Global Financial Market, global commodity prices which are preceded by low world oil prices spreading to other commodity prices and the weakening of Economic Growth in almost all countries which eventually triggers the International Trade Volume to fall.

The domestic side, in 2017 household consumption is expected to be a major contributor to increasing national consumption so that economic growth is expected to rise. On the other hand, government spending in the infrastructure sector is expected to be able to encourage the role of regional economies and national connectivity. Another effort in the Fiscal sector is the existence of tax amnesty which will encourage investment in the real sector through repatriation of ownership of funds that exist abroad.

In the 2017 of State Revenue and Expenditure Budget, it can be seen that Indonesia's economic growth has not yet reached its target. Meanwhile, in terms of state revenues, it is still not enough to cover State expenditures so that there are still budget deficits.

Table 1 Development of the State Budget (in billion rupiahs)

Description	2013	2014	2015	2016
State Revenue	1.438.891,1	1.550.490,8	1.508.200,4	1.555.934,2
State Expenditures		1.777.182,9	1.806.515,2	1.864.275,1
Financing		248.892,8	323.108,0	334.503,3
Investment		(8.908,9)	(59.654,8)	(89.079,8)
Economic growth		7,7 %	- 2,73 %	4,79 %

Source: Ministry of Finance of the Republic of Indonesia (2017)

Table 1 shows that investment from 2014 to 2016 has declined, it is also seen in the table that economic growth has not reached the target of 7.0 percent. To achieve the tax revenue target in the 2017 Adjustment State Budget Expenditure Plan, the government has carried out several policy strategies including 1) supervision of taxpayers based on mapping taxpayer compliance, 2) expansion of the tax base based on the tax amnesty program declaration assets, 3) making extra efforts through increasing billing, inspection and enforcement of tax laws, and 4) making extraordinary efforts through law enforcement after the tax amnesty program and cooperation with related parties.

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In addition to policies that have been put forward by the government to encourage economic growth, the investment side is expected to have a multiplier effect on national income so that it is expected to accelerate economic growth. The addition of large-scale investment in infrastructure structures is expected to increase economic growth. The description of direct investment and portfolios in Indonesia is illustrated in the followings table:

Table 2 Direct Investment and Portfolio (Million USD)

Year	Direct Investment	Portfolio Investment	Total Investment
2013.4	0,258	1,747	2,005
2014.4	2,661	1,883	4,544
2015.4	2,795	4,333	7,128
2016.4	3,541	-0,308	3,233
2017.4	4,605	1,888	6,493

Source: Bank Indonesia Report (2013-2016)

Table 2 shows the government issued an economic policy package since 2015. In 2017, there were sixteen volumes of policy packages, with some of them supporting increased investment (2017 Bank Indonesia Report). Many investment policies have been given by the government to stimulate domestic production, with multiplier effects expected to increase gross domestic product, so that the growth rate will also increase. Although various policies have been launched to boost state revenues, it seems that they cannot catch up with the amount of state expenditure.

On the other hand, the phenomenon of budget deficits is important in the period of catching up with economic growth, this problem becomes a dilemma and overlaps in choosing the right policy. Meanwhile, investment that is expected to have a multiplier effect can increase Gross Domestic Product, but this expectation has a lagging effect or a delayed impact.

Research conducted by (Nguyen & Trinh, 2018) shows that public investment in Vietnam in the past period did not affect economic growth in a U-shape pattern in Barro (1990), with positive effects mostly occurring since the second year and the negative effects of inhibiting long-term growth. Meanwhile, investments from private sector, state-owned companies, and FDI have a positive effect on short-term p economic growth and state-owned capital stocks have a positive impact on economic growth both in the short and long term. Estimates of the effect of public investment on private investment also show a similar U-reversal form where public investment has crowding-in short-term private investment but crowding-out in the long run.

Dutta, Haider, and Das (2017) found, there is a direct causal relationship running from FDI to growth, FDI with expansion policy brings higher economic growth. This unidirectional relationship might come for two reasons: (a) Bangladesh becoming more attractive to foreign investors for many prospects (labor availability, low wage rates, etc.) and (b) increased employment opportunities coupled with the abundance of productivity effects of multinational companies on local companies have a multiplier effect on GDP growth.

Dutta et al. (2017) found from his paper that Malaysian imports show negative and significant results, and gross capital formation and exports are positive and significant to determine economic growth both in the short and long term. Further results show that, in Nigeria, exports and gross capital formation are positive and significant in the short term, but in the long term gross capital formation is significant and exports are not significant. The discussion explains that the formation of capital or investment influences economic growth

Mentari (2017) in his paper The Effect of Foreign Direct Investment (FDI) on Economic Growth in West Nusa Tenggara 2010-2014 1 found that Foreign Direct Investment directly had a positive and significant effect on economic growth in NTB province in 2010-2014

William G. Gale (Gale & Samwick, 2014) in his research found that not all changes in tax will have the same impact growth. Reforms that increase incentives, reduce existing subsidies, avoid unexpected profits, and avoid deficits financing will have a more beneficial effect on the size of the long-term economy, but can also create a trade-off between equity and efficiency.

In the development process, the industrial sector is used as a development priority which is expected to have a role as the leading sector or

sector leader for the development of other sectors (Arsyad, 2014) . The industry sector is a Leading sector that the industrial sector can spur and lift the development of other sectors such as the agricultural sector and the service sector (Sholihah, Syaparuddin, & Nurhayani, 2017).

The study conducted by Rr Lulus Prapti NSS (NSS, Suryawardana, & Triyani, 2015) discusses the Impact of Road Infrastructure Development on People's Economic Business Growth in the city of Semarang, finding that road infrastructure has a significant positive effect on economic benefits, this reflects that investment is realized with road infrastructure encourage trade in business.

Subsequent research was conducted by Dessy Nabilah (Nabilah & Setiawan, 2016) , about Modeling Indonesia's economic growth using dynamic panel data with the Arellano-Bond Generalized Method of Moment (GMM) approach, stating that economic growth is a change in economic activity in generating additional income for a country's people within a certain period.

The results of the study by (Sa'adah, 2017), regarding tax amnesty policy The tax amnesty policy although on the one hand is considered to injure justice against compliant taxpayers, but the policy must be viewed from the principle of benefit, that the aim of the tax amnesty in the long term is to increase state revenues from tax sector through expansion of taxpayers and compliance with tax administration bases.

From several previous researchers linking the influence of some of the main variables is an investment towards economic growth which describes the fluctuations in the results of the research. The researcher wants to examine more about the effect of investment on economic growth. On the other hand, the phenomenon of budget deficits is important in the period of catching up with economic growth, this problem becomes a dilemma and overlaps in choosing the right policy. Meanwhile, investment that is expected to have a multiplier effect can increase Gross Domestic Product, but this expectation has a lagging effect or a delayed impact. From the existing phenomenon, the authors want to review fiscal policy specifically to find out the impact of investment on Indonesia's economic growth, in the pre and post period of imposition of tax amnesty policy.

2. Literature Review

2.1. Investment

Investment plays two roles in macroeconomics. The first investment is a large expenditure component, the second is investment leads to capital . The drivers of investment are 1) revenue factor, 2) cost factor, 3) expectation factor. Revenue Factor, Investment will provide more additional income if this investment is able to make the company succeed in selling more products. The cost factor, what is meant by investment costs is the interest rate. In this connection, if the investment purchase with a bank loan, then the bank's interest rate is quite influential as well.
Expectation factor is the estimation of investment on the results obtained from the investment.

According to Todaro (Sulistiawati, 2012), investment plays an important role in driving the nation's economic life, because capital formation enlarges production capacity, raises national income and creates new jobs, in this case, it will expand employment opportunities. Furthermore, Mankiw (Mankiw, 2003) states that technological innovation is one of the factors that can increase investment demand. According to Sukirno (Sukirno, 2001) investment can also be interpreted as spending or shopping on investors or companies to buy capital goods and equipment to increase the ability to produce goods and services available in the economy.

Harrod-Domar in Arsyad (2014) developed Keynesian theory by giving a key role to investment in the process of economic growth, especially regarding the dual nature of the investment. First, investment creates income (an impact of investment demand), and second, investment increases the production capacity of the economy by increasing capital stock (an impact of investment offers)

2.2. Economic Growth

According to Harrord-Domar's theory, capital formation is an important factor that determines economic growth. The formation of capital can be obtained through the process of accumulating savings. In Harrord-Domar's theory, capital formation is not only seen as an expenditure that will increase the ability of an economy to produce goods and services, but also will increase the effective demand of the community.

According to Todaro (Sulistiawati, 2012) (2000: 136) there are three main factors or

components in economic growth of each country, namely: 1) Capital accumulation, which includes all forms or types of new investments invested in land, physical equipment, and capital or human resources; 2) Population growth, which in the next few years will increase the number of workers; and 3) Technological progress, which is considered the most important source of economic growth

Solow and Swan in Arsyad (Arsyad, 2010) then corrected Harrod-Domar's theory by showing that economic growth depends on the availability of factors of production (population, labor, and capital accumulation) and the level of technological progress. The assumption used is the scale of constant returns (constant return to scale), the substitution between capital (K) and labor (L) is perfect, and the diminishing marginal productivity of each input.

2.3. Use of the Lag Method in Independent Variables

In economics the dependence of a Y variable (dependent variable) on variable X (independent) is rarely instantaneous, especially concerning a policy. Often Y reacts to X with an interval. Such a time interval is called lag. Lag on the GDP variable to economic growth has an influence on the time of growth. Likewise, tax variables, tax policies and investment policies and interest rate policies have a time interval for, where an economic policy will have a time interval to influence the effect on growth. The time interval in question is an interval of 1 period or 1 quarterly period.

2.4. Reasons for Lag

Richie explained (Richie, 2018), there are three main reasons why lags occur, including

1. Psychological Reasons. Due to the strength of habits, people do not change their consumption habits immediately following a decline in prices or an increase in income as possible because the process of change involves an immediate loss of usefulness. So people who suddenly become millionaires for winning the lottery, may not change the way of life that has been accustomed to him for a long time because they may not know how to react to windfall gain, immediately. Of course, with enough time, they can learn to live with the luck they have just received. Also, maybe people know whether a change is "permanent" or "temporary". So, the reaction to an increase in income will depend on whether the increase is permanent or temporary. If this is only an increase for once and in the next period income returns to the previous level, I will probably save all of that increase in income, while others in my position may decide to enjoy it to their heart's content.

2. Technological reasons. Suppose that the capital price compared to labor is relatively decreasing, which causes substitution (substitute) of capital for labor economically possible. Of course, additions in capital require time preparation (preparation period). Furthermore, if the decline in prices is expected to be only temporary, companies may not rush to replace capital for their workforce, especially if they expect after a temporary decline in capital prices will probably rise above the previous level. Sometimes imperfect knowledge also causes lag. At present, the market for electronic pocket calculators is saturated with all types of calculators with various calculation characteristics and prices. Furthermore, since its introduction in the late 1960s, the prices of most calculators have dropped dramatically. As a result, prospective customers for calculators may hesitate to buy until they have time to look at the characteristics of the prices of all competing brands. Furthermore, they are hesitant to buy because they hope there will be a further decline in prices or useful updates.

3. Institutional reasons. This reason also contributed to the lag. For example, contractual obligations may prevent companies from switching from one source of labor or raw material to another. Furthermore, Richie explained, Estimating Distributed Lag Models (Distributed Lag Models). By believing that the distributed model plays a very useful role in economics, how do people estimate such a model? Especially if we have a model that is distributed in one variable that explains the following:

$$Y_t = \alpha + \beta_0 X_t + \beta_1 X_{t-1} + \beta_2 X_{t-2} + \cdots + u_t$$

Because the variables that explain X_t are assumed to be nonstochastic (or at least not correlated with the elemental disturbance u_t), X_{t-1}, X_{t-2} and so on are also nonstochastic. Therefore, in principle, the ordinary least squares (OLS) can be applied to the above equation. This is the approach taken by Alt and Tinbergen. They suggest that to estimate the lag equations that are distributed people can move forward sequentially (stepwise), which is first to recite Y_t over X_t, then to

regression Yt¬atas Xt and Xt-1, then to regress Yt¬atas Xt, Xt-1 and Xt -2, and so on
These sequential procedures stop when the regression coefficient of the lag variable starts to become statistically insignificant (or insignificant) or the coefficient of at least one variable changes

the sign from positive to negative or vice versa. Following this rule, Alt revised consumption for fuel oil Y for new orders X. Based on quarterly for the period 1930.d1939, the results of the analysis are as follows,

$$Y_t = 8.37 + 0.171X_t$$
$$Y_t = 8.37 + 0.111X_t + 0.064X_{t-1}$$
$$Y_t = 8.27 + 0.109X_t + 0.071X_{t-1} - 0.055X_{t-2}$$
$$Y_t = 8.32 + 0.108X_t + 0.063X_{t-1} + 0.022X_{t-2} - 0.020X_{t-3}$$

Choosing the second regression as "the best" because in the last two equations of Xt-2 it is not stable and in the last equation the sign of Xt-3 is negative, which may be difficult to interpret economically.

3. Research Methods

This research uses data published by Bank Indonesia, the Ministry of Finance and the Ministry of Industry. To find out how much the relationship between each independent variable to the

dependent variable is used path analysis with regression analysis with the program Eviews 7.
The samples in this study are investment data, direct investment, gross domestic product lag (1), interest rates lag-1, taxes lag-1 and various economic policies as dummy variables. The data range is in 2013.1 until 2017.4 with n = 20.
The analysis in this study uses Path Analysis, an extension of multiple linear regression analysis also useful for knowing the relationship between independent variables and dependent and indirect relationships through intervening.
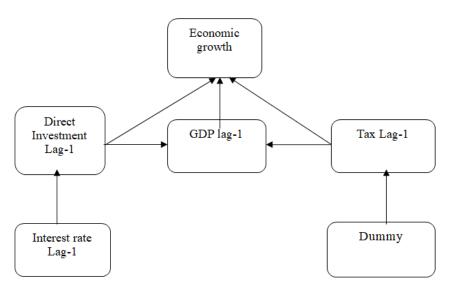

Figure 1 Path Analysis Model

a. GDPlag-1 has a direct effect on economic growth
b. Direct Investment Lag-1, directly influences the economic growth variable
c. Tax Variable lag-1, has a direct effect on the variable economic growth
d. Dummy variable (Economic Policy), as an intervening variable moderating tax variables that influence economic growth

e. Interest rate lag-1 as an intervening variable moderates investment variables towards economic growth.

3.1 Structural model equation

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + e$$

5

Note:

Y = Indonesian Economic Growth
b = Path Coefficient
X1 = GDPlag -1
X2 = Direct Investment Lag-1
X3 = Tax Lag-1
X4 = Dummy (Tax and Investment Policy)
X5 = Interest Rate Lag-1
e = Error

4. Results and Discussion

The results of this study show that:

$$Y = 7,1 - 2,02X_1 + 0,27X_2 + 7,54 X_3 + 4,08X_4 - 0,29X_5$$

1,4   -1,58   1,55   0,64
4,23   -0,75

Table 3 Hypetheses Testing

Variable	Coefficient	t test	t table (α,n-k)	Result
C	7,1	1,4	1,341 (0,90, 15)	Significant
GDP lag -1	-2,02	-1,58	1,341 (0,90, 15)	Significant
DirInv Lag-1	0,27	1,55	1,341 (0,90, 15)	Significant
Tax lag-1	7,54	0,64	1,341 (0,90, 15)	Not significant
Dummy	4,08	4,23	1,341 (0,90, 15)	Significant
Int rate Lag-1	-0,29	-0,75	1,341 (0,90, 15)	Not significant
R- Squared	0,66			
D-W		1,83	k=5, α=0,05 dl = 0,99 du=1,67	There is no positive autocorrelation
F Stat		5,6	(α=0,05, k=5, n=20) 2,81 (0.05, 5, 20)	Independent variable has a relationship to dependent variable

Source: Own calculations

Table 3 shows that DirInvLag-1, Tax Lag-1 and Dummy has a significant relationship, but GDPLag-1 and Int Rate Lag-1 have insignificant relationships. Dir Inv Lag-1 has a coefficient of 0.27, this means that if there is an increase in direct investment 1 unit it will increase economic growth by 0.27 units. Dummy variable is an intervening variable, it turns out that it can moderate taxes with the Lag-1 Tax coefficient of 7.54, this means that if there is a tax increase of 1 unit it will increase economic growth by 7.54 units. The Dummy coefficient has an economic growth coefficient of 4.08, indicating that tax policies can encourage economic growth. The effect is with a delay of 1 period (Lag-1) or in this case 1 quarter.

From the results of the study indicate that it turns out that Direct Investment and GDP greatly influence the increase in economic growth, and taxes also significantly influence economic growth, with the influence of Lag (delayed) one study period or a quarter of a year. This research shows there is interest in other countries to invest in Indonesia. This is in line with the Indonesian government's program to receive direct investment in infrastructure development in eastern Indonesia. When viewed from the results of the findings on the Tax variable that is quite large affecting economic growth, this shows that the relevant tax policy has a very large effect on the increase in the quantity of taxpayers and this will increase the acceptance of State tax.

R Square = 0.66, meaning 66% variable Direct investment, tax and tax policy and interest rates can explain Indonesia's economic growth. The DW value = 1.83 indicates that the selected data have no positive autocorrelation. F statistic = 5.6 shows that the independent variable (PDBLag-1, Lag-1 Direct Investment, Lag-1 Tax, and tax amnesty policy) has a relationship that is relevant to the dependent variable (Economic Growth).

5. Conclusion

Investment plays an important role in driving the country's economic life, because capital formation enlarges production capacity, increases national income and creates new jobs, technological innovation is one of the factors that can increase investment demand, especially with the digital economic era that enables innovators to create startups and unicorn in the 4.0 industrial revolution

The main source of State revenue is from taxes so that taxes can be expected to finance the needs of the State both for development, consumption and State expenditure. State needs can stimulate State Production so that Gross Domestic Product and economic growth also increase.

Economic policies such as tax amnesty and investment policies are capable of significantly increasing economic growth.

Direct investment can influence economic growth positively, in the fiscal policy the role of investment is important to increase national production so as to increase GDP and Indonesia's economic growth. The path coefficient on Direct Investment is 0.27

The interest rate is able to influence or moderate investment so that it can indirectly influence economic growth

The General Evaluation Estimator model is still relevant for estimating economic growth, although the impact will not be directly and backward according to the proposed lag.

In terms of investment, the growth of investment in 2017 is expected to strengthen. The development of good infrastructure projects whose implementation is carried out by the Government, SOEs, the private sector, is greatly needed to increase the growth of national production. Infrastructure development is expected to have a further impact through the expansion and strengthening of domestic economic activities. Infrastructure development by the Government is expected to reduce logistics costs and improve Indonesia's investment competitiveness. In addition, to increase infrastructure development and investment competitiveness,.

The increase in direct investment in both Foreign Direct Investment (FDI) and Domestic Investment (DI) in various economic sectors are expected to increase in line with the deregulation of regulations in the investment sector, fiscal incentives for the industrial sector, creation of efficiency in logistics, and various fiscal facilities others for the business world.

The tax amnesty policy adopted by the Government is also expected to have an impact on strengthening investment and increasing liquidity in 2017. The government has prepared various investment instruments in order to accommodate repatriated funds within the framework of the tax amnesty.

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